E. E911 Does Not Exist in the Hatfield Model

In its May 8, 1997 Report and Order, the FCC included "access to emergency services, including in some instances, access to 911 and enhanced 911 (E911) services" in its definition of Universal Service. The Hatfield Model does not include any investment or costs for emergency services. There are no provisions for either the trunks or the databases necessary to offer emergency services.[103]

The failure of HM 5.0 to include this very important (and FCC-mandated) component of the forward-looking network is another of the Model's serious shortcomings that prevents the network HM 5.0 models from being fully operational.

F. Insufficient Time Has Been Allowed To Analyze The Interoffice Facilities Portion of The Hatfield Model 5.0

Earlier versions of the Hatfield Model contained serious flaws in the calculation of IOF-related costs[104]. HM 4.0 did not provide sufficient interoffice route distances and associated structures, and understated the required quantities of certain IOF network components. Model developers maintain that significant changes have been made to the IOF portion of HM 5.0 to correct these shortcomings. Given the fact the that HM 5.0 has only been available for a very short period of time, and that portions of the IOF segment of the Model are now coded in Visual Basic, GTE has

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[103] AT&T's Response No. 149 to GTE's Seventh Set of Data Requests Submitted in the Washington Consolidated Cost Dockets Nos. UT-930369,-70,-71.

[104] See Rebuttal Testimony of Dr. Gregory M. Duncan and Robert P. Cellupica on Behalf of Contel of Minnesota d/b/a GTE Minnesota, Before the Minnesota Public Utilities Commission, November 24, 1997.

not had sufficient opportunity to decipher completely the changes made to this section of the Model. Our initial analysis indicates that the IOF portion of the Model contains the following shortcoming:

1. Route-to-Air Ratios Are Understated

In the default mode, HM 5.0 assumes a SONET fiber ring IOF architecture for the larger "on-ring" central offices and a route diverse OC-3 architecture for the small "off-ring" offices." Distances between facilities are computed as right angle runs,"[105] based on location data extracted from Bellcore's Local Exchange Routing Guide (LERG). This approach can produce route-to-air ratios ranging in value from 1.0 up to 1.41. The average route-to-air ratio that could be produced by this method is 1.27. Bellcore Notes on the LEC network cite the average route-to-air ration with respect to feeder and distribution is 1.6. This is considerably higher than the average ratio in the Hatfield Model.

2. IOF Routes Cannot Be Modeled for GTE

The IOF portion of HM 5.0 cannot model GTEContel's IOF network in Alabama. The Model does not allow a combined IOF network to be constructed for GTE Alabama and Contel of the South end offices. Consequently, the user is only able to model two separate IOF networks. This is unrealistic and not representative of the environment in which GTE/Contel operates today in Alabama. This inability of the Model to design a combined IOF network renders IOF costs produced by the Model meaningless.

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[105] Hatfield Model 5.0, Model Description, Appendix D, Page 2.

G. Some SS7 Signaling Links Have Inappropriately Been Omitted From The Model

The Hatfield Model Release 5.0 Description states "interLATA links are excluded from the model because such links are assumed to carry interLATA toll traffic, therefore are not be part of the monopoly local exchange network" (SIC emphasis in original).[106] This is an inapproporiate and self-serving exclusion. The Hatfield Model, in theory, bases its switching, interoffice facility and signaling networks on the total dial equipment minutes (DEMs) that the ILECs report to the FCC. These DEM counts include intrastate DEMs and interstate DEMs,[107] which means that all traffic flowing to the interexchange carriers (IXCs) is included in the switch network throughput modeled by Hatfield. The Modelers attempt to take full advantage of all economies of scale by including this traffic.

When they size the ILEC Signaling Tranfer Points (STP) however, they scale back the STP investment based on the number of links that must terminate on the STPs.[108] By excluding certain links, the Hatfield Modelers inappropriately reduce the STP investment and then spread that reduced investment over an inflated number of signaling messages, because those messages include all traffic that remains on the ILEC network. The exclusion also artificially reduces the quantity of IOF transmission equipment that would be required to accomodate the required signaling links.

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[106] Hatfield Model Description, Footnote 12.
[107] HIPS 5.0, Section 4.3.7 and 4.3.8.
[108] HIPS 5.0, Section 4.7.1 through 4.7.4.

This assumption inappropriately excludes a *minimum* of twenty signaling links per LATA. ILECs are not allowed to traverse LATA boundaries in their deployment and use of STPs. Signaling links and STPs are always deployed in pairs for network reliability purposes. In addition, the Hatfield Model assumes five Interexchange Carrier (IXC) points of presence (POPs) per tandem, meaning that they are modeling the presence of five IXCs per LATA. For each of the five assumed IXCs, there must be two links going from each of the ILEC STPs to the IXCs' pairs of STPs (i.e., 5*2*2 = 20 links).[109] The Hatfield Model fails to build the network this way which results in an understatement of SS7 related investment in the Model.

CONCLUSION

For all of the foregoing reasons, this Commission should conclude that the Hatfield Model is not an acceptable means either for estimating universal service support or unbundled network element costs.

[109]For further information see, "Bellcore Notes on the Network", Issue 3, December 1997, Section 6.23.1, CCS Architecture.

Corrections to the Rebuttal Testimony of Frank J. Murphy Filed 2/13/98 with the Alabama Public Service Commission

Correction #1 to the paper entitled "Analysis of the Hatfield Model Release 5.0":

The following paragraphs appear of page 56 and 57:

HM 5.0 was run in default mode for all GTE and Contel locations. The Model's investment input spreadsheet for each jurisdiction was used to produce a summed total of all GTE/Contel switched lines (13,600,344) and corresponding switching investment ($1,442,578,701). Dividing the Model's total lines into the Model's total investment produced a per line GTE switching investment value of $106.07.

The variation between the computed per line switching cost produced by the Model ($106.07) and the purported publicly available per line switch cost data used in the Model (NBI adjusted for EF&I -- $129.80) represents an inconsistency in HM 5.0 and demonstrates the inability of the Model to produce credible results. HM 5.0 relies upon the NBI study as a means for representing ILECs' forward looking costs, yet the Model's internal computations are incapable of duplicating the relied upon data. When compared to the NBI data, the Hatfield Model produces a deficit of $23.73 for every GTE line in service, or over $322 million in investment shortfall. Such a result is an attestation to the Model's deficiencies.

These paragraphs should be changed to read:

HM 5.0 was run in default mode for all GTE and Contel locations. The Model's investment input spreadsheet for each jurisdiction was used to produce a summed total of all GTE/Contel switched lines (16,368,115) and corresponding switching investment ($1,696,244,010). Dividing the Model's total lines into the Model's total investment produced a per line GTE switching investment value of $103.63.

The variation between the computed per line switching cost produced by the Model ($103.63) and the purported publicly available per line switch cost data used in the Model (NBI adjusted for EF&I -- $129.80) represents an inconsistency in HM 5.0 and demonstrates the inability of the Model to produce credible results. HM 5.0 relies upon the NBI study as a means for representing ILECs' forward looking costs, yet the Model's internal computations are incapable of duplicating the relied upon data. When compared to the NBI data, the Hatfield Model produces a deficit of $26.17 for every GTE line in service, or over $428 million in investment shortfall. Such a result is an attestation to the Model's deficiencies.

Reason for the Correction: Two of the states in GTE's operating territory were inadvertently left out of the analysis. The new paragraphs reflect the corrected values that reflect all the states in GTE's operating territory.

Correction #2 to the paper entitled, "An Analysis of the Hatfield Model Release 5.0"

On page 97, the sentence that reads,"Bellcore Notes on the LEC network cite the average route-to-air ratio with respect to feeder and distribution is 1.6."

This sentence should read, "It is interesting to note that this value is considerably less than the route-to-air ratio of 1.6 used by AT&T in its own cost model."[1]

Reason for Correction: Incorrect reference was cited.

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[1]AT&T's Response No. 10 to Pacific Bell's Third Set of Data Requests, Before the California Public Utilities Commission of California, R. 93-04-003, I. 93-04-002, 3/13/97.